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EXPLORATION OF SIMULATION AS A RETIREMENT EDUCATION TECHNIQUE. FINAL REPORT.

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A PILOT PROJECT EXPLORED THE ADAPTATION OF SIMULATION TECHNIQUES TO FOUR RETIREMENT PROBLEMS--FINANCIAL POSITION, PHYSICAL ENVIRONMENT (HOUSING CHOICES), HEALTH, AND SOCIAL ENVIRONMENT (PLANNING AND GAINING SKILLS BEFORE RETIREMENT). A PRELIMINARY MODEL OF A GAME IN RETIREMENT FINANCE PRESENTS PLAYERS WITH THREE INVESTMENT SITUATIONS--SAVINGS CERTIFICATES, COMMON STOCK, AND LIFE INSURANCE. THERE ARE TWO GROUPS OF PLAYERS--HOUSEHOLD DECISION MAKERS AND FINANCIAL AGENTS. IN TEN TWO-YEAR PERIODS REPRESENTING THE AGE SPAN 45-65, PLAYERS ALLOCATE DISPOSABLE INCOME TO MAXIMIZE ASSETS BY AGE 65. THE FINANCIAL AGENTS (SAVINGS AND LOAN ASSOCIATION MANAGER, STOCKBROKER, AND THREE LIFE INSURANCE AGENTS SELLING TERM, ENDOWMENT, OR STRIGHT LIFE) COMPETE FOR THE HOUSEHOLDER'S INCOME. A COORDINATOR DETERMINES EACH PLAYER'S BIANNUAL SCORE, OVERSEES THE SELECTION OF CHANGE CARDS, AND UPDATES THE ECONOMIC INDEX. FIELD TESTS, BASED ON THE CONSUMER GAME, INDICATED THAT THE SIMULATION TECHNIQUE IS EFFECTIVE AMONG OLDER WORKERS. RESEARCH WILL CONTINUE UNDER THE NATIONAL INSTITUTE OF INDUSTRIAL GERONTOLOGY, BEING ESTABLISHED BY THE NATIONAL COUNCIL ON THE AGING, TO PRODUCE A WELL-DESIGNED SEQUENCE OF GAMES TO GIVE PRACTICE IN RELATING PROBLEMS SO THAT PLAYERS CAN ARRIVE AT A COMBINATION OF DECISIONS TO FIT THEIR NEEDS AND RESOURCES. (DOCUMENT INCLUDES THREE FIGURES.) (AJ)

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Mr. Gerald Zaltman of the Department of Social Relations at the Johns Hopkins University, provided a great deal of assistance in developing these retirement simulation models. He will serve as co-author of a paper on this research to be delivered before the Gerontological Society, November 9, 1967.

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The basic objective of this pilot project was to explore the adaptation of simulation techniques to problems of retirement education. The project proposal outlined the following sequence of activities:

--identification of the dimensions or problems to be included in a simulation model, based upon review and synthesis of the literature on preparation for retirement;

--development of a preliminary simulation model or models;

--exploratory field testings of one or more prototype simulations with a small sample of older persons.

Figure A shows the scheduling of activities in the project. As the figure indicates, in addition to the activities originally proposed, we consulted with a number of scholars, policy makers, and other specialists in the field of aging, which served both to fill in gaps in the available published materials and to give some feedback on our developing models. Figure A also lists the conferences at which we have given or are scheduled to give papers on the project.

A Preliminary Decision-Making Model

While the available literature on retirement preparation points to the need for planning well in advance of actual retirement or reduced participation in the labor market and introduces a host of different problems that will face the retiree, we found no general decision-making models that could be translated directly into training simulations. Thus our first task was to specify the major

decision areas with respect to retirement and to show how the components of the system were related to each other. Figure B is a diagram of our preliminary formulation, showing the major components of the decision-making model and our postulated structure of casual interrelationships. The following paragraphs will take each component in turn, describing the basic decision or decisions involved, the particular problems or changes which occur as a consequence of retirement or aging, and a rough "accounting" of the cost and rewards of various types of decision alternatives. Following the identification of individual parts, we shall outline briefly how the decision areas are interrelated.

Decision Area 1: FINANCIAL POSITION. The basis of the older person's economic problems is the sharp drop in income that usually occurs with retirement or reduced job participation. And while there are clear financial advantages to early retirement planning, it is also true that the years of peak earning power occur during the middle-age period, which are also the years when family expenditures are high and when many other problems are competing for the individual's attention and money.

Even if the middle-aged person is motivated to plan ahead with respect to his retirement income, rational decision making is difficult. There are a great number of different means of saving and investing money, including savings accounts, stocks, real estate, and insurance, and it is difficult to gain more than a superficial understanding of any one means, let alone compare them intelligently. For example, while many people are aware that one "should" plan early

in connection with their insurance coverage, few know exactly what benefits are provided by various types of policies at various points in the individual's life nor when it can be advantageous to convert some policies to provide retirement income. And as far as we could discover, there are no objective sources of information regarding the relative costs and benefits of insurance vs. stocks and other forms of investment and savings.

Thus one of the sub-games proposed for retirement preparation is oriented toward helping older persons to evaluate these financial alternatives and to compare various kinds of financial strategies. Since this is the area in which we are developing our first actual game, it will be discussed in greater detail in the following section.

Decision Area 2: PHYSICAL ENVIRONMENT. A second major set of decisions center around what changes, if any, the retired person will make with respect to where he lives. This decision should take into account such factors as the size, cost, and maintenance requirements of a given dwelling, and the characteristics of the neighborhood, community, and geographical region in which it is located.

Our review of the literature indicated that most students of the housing problems of older people agree that the socio-economic aspects of housing are at least as important as the physical. First, many older persons are prevented from getting the kind of housing they want because the costs are beyond

their means, not because what they want is not available. (While the health condition of a small group of retired persons calls for specially designed houses or apartments, the great majority of older persons' housing problems are a matter of economics rather than of aging per se.) Second, the kinds of social interaction afforded by the surrounding neighborhood or community seem to be very important, in that people who are most satisfied with their housing are those for whom the surrounding environment provides the kinds of social activities (or lack of activities) which are congruent with their own social needs.[1]

Thus the most useful kind or training simulation in the general area of housing or physical environment would combine two kinds of decision-making practice.

1) learning about and comparing various housing choices, including:

   -- staying in one's present home, perhaps making some repairs or changes which will make it better suited for retirement living;
   -- seeking a smaller or a different type of dwelling (e.g., from a house into an apartment);
   -- moving to a different type of community;
   -- moving to a different region of the country (perhaps with a more favorable climate);
   -- moving to a special apartment for older persons or to a retirement community;
   -- having more than one residence (e.g., a small apartment in a city and a second "vacation" house in an area with an especially pleasant climate).

2) learning about the socio-economic requirements and consequences of

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1 For a more thorough sociological analysis of the housing problems and patterns of older persons, see Rosow, Irving, Social Integration of the Aged, New York: Free Press, 1967.

alternative housing decisions--and, in particular, gaining skill in matching the type of housing to the type of person involved, in terms of his or her income, health, sociability needs, family and friendship ties, and so on.

Decision Area 3: HEALTH. The health problems of the aging are well summed up in the following passage from a recent study of the social adjustment of elderly persons in several small towns:

> Probably no problem is of greater concern to the older person than is health. With advancing years, illness and infirmity tend to become more frequent and more severe. Health status will influence almost every aspect of the oder person's life: his income and outgo, the degree to which he can remain independent or must rely on the help of others, his type of residence, his degree of mobility, the extent of his participation in the life of the community, and association with other people. Morale, a sense of well-being and social adjustment are all likely, in large part, to be functions of health.[1]

The core of the problem is that physical health is in most respects inversely related to age. That the probability of certain types of accidents and illnesses increases markedly is indicated by the fact that among those age 65 and older:

> -- 78% have some kind of chronic condition;
> -- 14% have some major limitation of activity as a consequence of illness or accident;
> -- 9% are housebound.[2]

The mental health of the aged is more difficult to evaluate. Certainly the

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1. Pihlblad, C.T. and R.L. McNamara, "Social Adjustment of Elderly People in Three Small Towns", in Arnold M. Rose and Warren A. Peterson (eds.) Older People and their Social World, Philadelphia: F. A. Davis Co., 1965, p.57.

2. U.S. National Health Survey, Limitation of Activity and Mobility Due to Chronic Condition, United States, July, 1957 - June, 1958, Washington: Public Health Service, 1959.

generally negative attitudes towards aging held by our society in general, and by many older people themselves can only contribute to psychic anxiety and other unfavorable conditions. On the other hand, there is some evidence that older persons are as optimistic or more optimistic about their health than younger persons, although to what extent this reflects repression is not yet understood.[1]

While we do not yet have a clear picture of how a game in the general area of health would be structured, two types of strategies with respect to improving the health of older people could be communicated in such a game:

(1) strategies on the individual level. -- i.e., things that the older individual himself can do to improve his chances of good health in his later years. These include such things as regular physical examinations, proper attention to diet, and adequate health insurance.

(2) strategies on the group level -- i.e., strategies based upon social action. Given the growing numbers and longevity of people in the older age categories, they could with the proper identification and political organization become a power capable of bringing pressure to bear upon political, economic and other institutions in such a way as to increase the health resources available to older people as a group. This could include such things as obtaining increased social security benefits, extended Medicare benefits and services, and more and better staffed nursing homes.

Decision Area 4: SOCIAL ENVIRONMENT. While the physical and economic needs of older people are often pressing and unmet, perhaps the most difficult adjustment for most retirees is in connection with their social relationships and actitivities. In recent testimony before a Congressional committee on retirement, Secretary of Health, Education and Welfare, John W. Gardner, argued that our

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1 Weinstein, Harry, "Expectations for the Aged in the Next Decade," speech delivered to Conference on Aging and Ability, University of California, San Francisco Medical Center, May 5, 1967.

society is moving toward solutions to the income, housing, and health problems of the aging (our decision areas 1, 2 and 3), but that so far it has not assumed responsibility for giving older persons interest and purpose in life. Pointing out that the typical man retiring at age 65 could expect at least 25,000 hours of "extra time" for the balance of his life, he said that too much of this time will be spent in "aimless boredom" rather than constructive use, because:

> All too often the man reaching age 65 has spent much of his work career in a routine or blind-alley job, has been denied the opportunity to think actively and constructively about the use of his abilities and has learned no new skills or interests for years. Then we plunge him into one of life's toughest adjustments and expect him to make it easily.[1]

To summarize, for most persons retirement means:

-- an abrupt change in the type of activities which comprise the typical day;

-- a large increase in "leisure," or time not committed to some regular, recurrent, and to some degree prescribed activity.

-- an important loss of status, in that in our society someone who is not fully involved in the labor force is considered a kind of deviant or incomplete person.

The structure and operation of this sub-game model still remain to be specified in greater detail. One of the difficulties is that the literature itself is often conflicting with respect to the best strategies for a satisfying social life. These range from the strategy of "disengagement" or gradual withdrawal from active involvement in a number of social roles, as formulated by Cummings and others,[2] to the active identification with and association with age peers formulated by

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1 Gardner, John W., Testimony before the U.S. Senate Committee on Aging, Subcommittee on Retirement, Washington, D.C., June 7, 1967. Mr. Gardner's recommendations incorporated at least two of the important principles underlying our proposed use of simulations in retirement preparation: providing information and autonomy so that older persons can make a real choice with respect to their own future; and providing retirement "clinics" and other training preparation aids to persons "ten or fifteen years away from normal retirement, instead of those on the verge of it."

2 Cummings, Elaine and William E. Henry, Growing Old, New York: Basic Books, 1961.

Rose,[1] who sees such group consciousnesss and participation not only as a means of working against the negative self-concept now characteristic of aging in our society, but also as a means of obtaining tangible political, economic and other benefits for older persons. Specifying the costs and rewards of various social activities is further complicated in that there seems to be a very complex, interactive set of relationships between the characteristics of the activity and the characteristics of the potential participant. For example, satisfaction with one's social life has been found to be related to both informal contacts with friends and neighbors and membership in formal associations (church, civic and social), but not to be very strongly related to contacts with children or siblings. (partly because variation in the latter is itself interrelated with a number of other factors such as social class, residential proximity, and the nature of intra-family relationships). Moreover, even the effects of non-family interaction upon satisfaction are complicated by whether or not they are congruent with the interaction needs of the individual older person and the opportunities for contact in his environment.[2]

While the parameters of the dimensions variables in this model have not yet been specified, we hope that this sub-game will provide:

-- practice in planning the large blocks of free time characteristic of retirement. It seems likely that we can adapt a form already developed for a Hopkins game on career decision-making, in which players decide upon the sequence of activities in a series of one-week periods in the life of a fictitious high school student; [3]

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1 Rose, Arnold M. "The Subculture of the Aging: A Framework for Research in Social Gerontology", in "Older People and their Social World", op. cit., p. 3 - 16.

2 See, for example, C. T. Pihlblad and R.L. McNamara, op.cit, and Irving Rosow, op.cit.

3 Life Career Game, © Sarane S. Boocock, 1966.

-- information on a variety of activity alternatives available to older persons, including not only the traditional types of hobbies and social organizations, but also some of the newly developing areas of action (e.g., courses of academic study designed especially for older students, to enrich their leisure or to enable them to get degrees that they did not get "the first time around", such as the Institute for Retired Professionals, at New York's New School for Social Research, or the University of California's "Methuselah I" project; possible new semi-professional careers as aides in hospitals, schools and social agencies; and associations designed by the new category of older persons Rose terms the "aging group conscious", whose programs are characterized more by a social action orientation not found in the conventional senior citizens clubs).

-- re-inforcement of the general necessity of planning and gaining skills in a variety of activities which not only fill time but also provide a sense of personal achievement, recognition from others, and an amount and type of sociability congruent with one's own needs, and doing such preparation well in advance of actual aging and retirement. The general point here is that because there seems to be general agreement that "the amount and style of an aged person's participation are an extension of an emerging pattern begun in childhood, and shaped in earlier adulthood", and that "age is less important in predicting participation patterns than are the 'routes' one has taken through life",[1] one cannot win the game of SOCIAL ENVIRONMENT by simply plunging into a round of unplanned activity at age 65.

Overview of One Game: Retirement Finance.

Because of the time limitations and the exploratory nature of this project, we have taken one of the four decision areas and have developed a rough game outline. Our choice of the economic area was determined by three considerations:

1) this is an area in which we have already had considerable experience and have in fact already developed a game which covers some of the same problems and which has been successfully used with adults;[2]

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[1] Videbeck, Richard and Alan B. Knox, "Alternative Participatory Responses to Aging", in Older People and Their Social World, op. cit ., p. 38

[2] Consumer, © Gerald Zaltman, 1967

2) if one of the four decision areas could be singled out as central or requiring solution prior to the resolution of problems in the other areas, it is the economic area. The direct and significant effects of one's financial position upon one's physical condition and the kind of medical care one can command, upon the kind of housing one can afford, and upon one's social relationships and choice of activities are direct and obvious (they are spelled out in the context of our system model in Figure C). In fact, some social scientists argue that the problems of older people are essentially economic problems rather than the problems of aging per se.

3) our previous field experience with older persons has indicated that this is the decision area about which older persons themselves are most anxious and about which they feel they lack accurate information with which to make decisions. For example, in field testing of a game designed to teach about the requirements and benefits of Medicare, the administrator was often asked for advice on insurance policies and other kinds of investments.

The proposed game of RETIREMENT FINANCE presents players with three investment or spending situations having an important influence on a family's financial status upon retirement of the major wage earner. The three situations, savings certificates, common stock and life insurance, vary in the ease and extent to which relevant decisions or strategies may be altered or reversed. Also, decisions with regard to one alternative are to some extent dependent upon decisions made concerning other alternatives.

There are two groups of players, household decision makers and financial agents:

Household Decision Makers: Most players are "household decision makers" whose retirement planning portfolio consists of some combination of savings certificates, common stock equity, and one of three basic forms of life insurance.[1]

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[1] Social security benefits and employers' retirement plans are excluded. Alone they are seldom, if ever, sufficient to maintain one's standard of living at pre-retirement levels and are very often beyond the control of the individual, i.e. he has no direct way of manipulating the benefits he is to receive. The three situations selected here are much more within any given person's control and are generally the sources providing the margin of income required for an adequate income level in post retirement years. The basic strategy is generally unaffected by the inclusion or exclusion of social security and retirement pensions. Excluding these latter considerations simplifies the simulation. Hopefully, the loss of realism is more than offset by the extra value of having participants concentrate on those kinds of factors that are most directly and immediately within their control.

The simulation proceeds in a series of ten two-year periods representing the age span of forty-five to sixty-five. In each period players receive a given sum of money in disposable income to be allocated as they see fit. All this income must be allocated each period. The money may be used to increase one or more components of the retirement planning portfolio. Players are free in varying degrees to re-allocate already committed funds. They may shift money from savings to stocks and vice versa, they may purchase additional insurance (with past savings if desired) or even drop insurance altogether.

The goal for each decision making team is to maximize the value of their assets at the end of the game, i.e, at age 65, and the household (or team) whose assets are highest is the winner. Participants also receive scores each period based on the present value of their investments for that period. This provides immediate feedback on current decisions and guidelines for subsequent decisions. The economic decision-making rule which aids players in determining the best allocation of their resources is the "present value" technique of capital budgeting, a concept which will be discussed in somewhat more detail later.

Financial Agents: A second group of players represent the following roles: one savings and loan association manager, one stockbroker account executive, and three life insurance agents each selling a particular form of life insurance, e.g., term, endowment, or straight life. These players interact directly with the household decisions makers and try to gain as large a share of the latter's disposable income as possible. Thus, the financial agents are also competing against one another and receive scores based on the volume and value of their transactions. Adjustments are,

of course, made for inherent disadvantages of one role relative to another. Actual certificates and policies are issued to the decision makers by the financial agents when a transaction is completed.

Coordinator: There is one coordinator in the game whose fun ction is to (1) determine each player's biannual score, (2) oversee the selection of chance cards and (3) update the economic index.

Chance Cards: Changes in player's life situation which can affect current planning strategies as well as retirement needs are conveyed through a set of chance cards. One card is drawn at random each month by each household unit in the game. A variety of medical, social and economic phenomena which are frequently faced by people in the time span covered by this game are simulated by the event described on the card. Often these events will require an adjustment in the r etirement portfolio.

Economic Index: In the game , as in real life, there is an element of risk involved in most economic decisions. For example, the owner of a life insurance policy runs a risk that the buying power of the endowment or annuities will be lessened by inflation. A forecast economic index for each period of the game is "published" (by the coordinator) every period. The indices are usually -- but not always -- reliable. (The index generally decreases in reliability the further away the time period to which it refers). Players may use the index as an aid in evaluating the risks involved in purchasing stock and insurance. The market value of common stock in any period will be partly a functio n of the actual economic index for that period.

Decision Making Rule and Illustration: The decision making rule in this game is simply to maximize the present value of an investment while also taking into account the uncertainty underlying that investment.[1] A possible example from the game will illustrate this. Assume a current market rate of interest of 4-1/2% (a frequent rate for passbook savings accounts). Let us assume, further , that there is no uncertainty surrounding alternatives in this example. At the start of the simulation a player may find himself in the situation where he has $1,000 to invest. The Savings and Loan Association Manager will be pressuring the player to invest in savings certificates or a special savings account which yields 5-1/2% per year. He is told that in twenty years (at age 65) this will give him $2,917. At the same time, the Stock Broker Account Executive may be urging the decision maker to purchase ten shares of common stock now selling for $100 a share. He is told that these stocks will probably yield an average dividend of $4 per share over the next twenty years and that the market value of the stock at that time should be $200 per share.

It is now up to the player to determine which alternative represents the best investment. By consulting a set of interest tables the player can see that the present value of savings certificates at current market rates is approximately $1,210 (.414 x $2,917)[2]

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[1] Determining the present value of an investment is essentially a reversal of the process of compounding interest. For example, $100 invested today at 4% simple interest compounded annually will yield approximately $148 in ten years. The present value of a future claim of $148 payable in ten years is determined by discounting the sum over the ten year period at the current market rate of interest. If this is 4% the present value is seen to be $100. Nobody would be willing to pay more than $100 for a claim of $148 in ten years nor would anyone be willing to sell this claim for less than $100. If the interest rate were to drop to 3% this same future claim would have a present value of $110 since that is what would be required to earn $148 in ten years at the new market rate. If the market rate of interest increased to 5% the present value of the present value of the claim would be approximately $91.

[2] Since the simulation involves only ten periods and a small variety of interest rates the actual interest tables will be relatively easy to read and use.

The present value of the $40 in dividends each year for twenty years is $520 (13 x $40) and the present value of the ten shares of stock twenty years hence is $828 (.414 x $2,000) The total present value for the stock, then , is $1,348. Clearly, the stock represents the better investment. The player's score for that investment period will be higher if he chooses the stock and the value of his assets at the end of the game will also be higher. Again, this is ignoring the risk involved in the purchase of stock. As indicated earlier there is a provision in the game whereby this uncertainty is expressed. The present value of the stock should actually be adjusted by this uncertainty. T his may result in the savings certificates being the better investment.

Field Testing

Field test were conducted in connection with this project for two purposes:

1) to discover whether the simulation technique produces among older workers the same kinds of interest and learning it has been found to produce in other types of educational and training situations;

2) to pretest the new materials being developed for the sequence of games on planning for retirement.

The first objective, of course, required an already completed game, and for this purpose we chose the Consumer game mentioned earlier in this report, since its content and structure were the closest to that of the new Retirement Finance game. In this test, eighty-three adults played Consumer. Participants were divided into approximately equal groups representing two different occupational backgrounds: professional and nonprofessional. (The occupation of the major wage earner in the family was the criterion employed in this classification). A measure of two dimensions was obtained. The first dimension concerned the extent to which adults adapted to a simulation game situation. This provided an indication of the compatibility of the

simulation technique with this age group. The second dimension concerned the degree of learning that occurred and pertained to the effectiveness of the simulation game. The findings may be summarized very briefly:

1) Adult involvement was relatively low during the early rounds of the game but increased considerably as the game proceeded, i.e, the level of activity in any given round generally increased as the simulation progressed. In fact, behavior at the end of the game did not differ appreciably from that of adolescents for whom comparable data were available.

2) The learning items tested were those that related to experiencing the consequences of decisions rather than those which could simply result from "going through the motions." Learning was found to be greatest among those who undertook more activities in the game. However, despite the lower earlier involvement a marked level of learning was achieved. The basic model, then, does not seem quite effective in encouraging players to discriminate among different behaviors or strategies in order to find the strategy providing the most favorable consequences.

3) Perhaps the most important find of all, given the general compatibility and effectiveness of this technique with adults, is that there were no significant differences between the two adult groups in their learning experiences. The particular model used here appears to be as effective with the adults from low income background as it is with their higher income counterparts. Since the former group are often at a disadvantage in other kinds of learning situations the simulation learning technique would seem to be an especially effective way of teaching this group.

Since the new game of Retirement Finance is still in the model stage, the second type of field testing was limited to an informal presentation and discussion with local groups of people in the pre-retirement age category, which produced little empirical data but confirmed the relevance of the game problems and structure for this audience. On the basis of this experience, the following procedure is planned for testing the completed game:

Paired groups of about thirty players each would be selected.

One group would play the game once, with information to be gathered at the end of the game. The pair group would play twice, but also be tested once (at the end of the second session).

Comparison of the learning scores of the two groups would provide a measure of the relative utility of longer exposure and replication of various simulation experiences, as well as information upon the extent to which specific factual information and general planning strategies can be communicated with varying amounts of game exposure.

Ideally, pairs of groups will be drawn from several different socio-economic groups. For example, in keeping with the testing procedures we generally used with high school students, our first trial will be with a group of relatively well educated and articulate persons in an adult education program (whose reactions and suggestions will aid us in revising the game). Revised versions will then be tested in a variety of other settings, including union meetings, senior citizens clubs, and corporation pre-retirement training programs.

A Correlated Set of Simulation Games: Conclusions and Plans for the Future.

During the six-month exploratory project, we have constructed a general model for a correlated set of simulation games on planning for retirement, developed the working model and preliminary rules for one of the four games in the proposed series, and done enough field testing of the simulation technique to feel confident that it will have the desired effects upon persons in the age group for whom the games are intended.

The next step is to complete the Retirement Finance game and to translate the other three sub-game models into operating simulations. In concluding, we wish to underscore that while the section on the total system model described the major decision areas separately and while for practical reasons we have limited ourselves to beginning one game during the past few months, none of the ultimate games will be in any real sense autonomous. On the contrary, decisions in one area are conceptualized as affecting and limiting the person's decision alternatives in other areas. The lines with arrows connecting the various components of the model in Figure B indicated the postulated interrelations among the system parts. Figure C spells out in more detail the nature of these interrelations.

Our ultimate objective is a series of correlated games, structured either so that one game leads naturally into or links in some meaningful way with

the next or so that each succeeding game incorporates the earlier ones. Which of these two methods of linkage is most appropriate will have to be decided after the various individual games have been further developed, but our present plan is to make the SOCIAL ENVIRONMENT game the last of the series and to structure the game so that in allocating time to various kinds of activities, the players must take into account the financial and health position of the person whose life is being planned and the resources -- or lack of resources -- in his physical environment.

A well-designed sequence of games should thus give players not only a feeling for the most important kinds of decisions they will have to make in their own later lives, but also practice in relating various problems to each other, so that they can establish decision priorities and, hopefully, arrive at a combination of decisions that fits their particular needs and resources.

The National Council on the Aging is establishing a National Institute of Industrial Gerontology to develop a body of knowledge and theory on the occupational aspects of aging and industrial retirement. The retirement simulation games research begun under this grant will be carried forward in the new Institute.

Figure A. Schedule of Activities for Project on Exploration of Simulation as a Retirement Education Technique

	Informal Consultation	Review of Literature	Development of Game Models	Field Testing	Presentation
May	Charles Odell * James Birren, Ph.D.** Carl Eisdorfer, Ph.D., M.D.*** Penn. State College Conference on creativity in the older persons.				Paper at University of California (San Francisco Medical Center conference on ability and aging).
June	NCOA Staff	NCOA Library			
July					
August	NCOA Staff	NCOA Library	Formulate basic decision areas.		
September			Formulate preliminary decision-making model.		
October			Specify set of subgames. Develop model for one subgame. (Retirement finance)	Test Hopkins Consumer game and Retirement Finance game model with two groups of older workers.	Write report project.
November					Report to Office of Education (Nov. 1) Present paper at annual meetings of Gerontological Society, St. Petersbur

* Director, U.S. Employment Service

** Director, Institute for Research on Aging and Retirement, The University of Southern California

*** Co-Director, Center for the Study of Aging, Duke University.

Figure B. Major Decision Areas in Preparation for Retirement

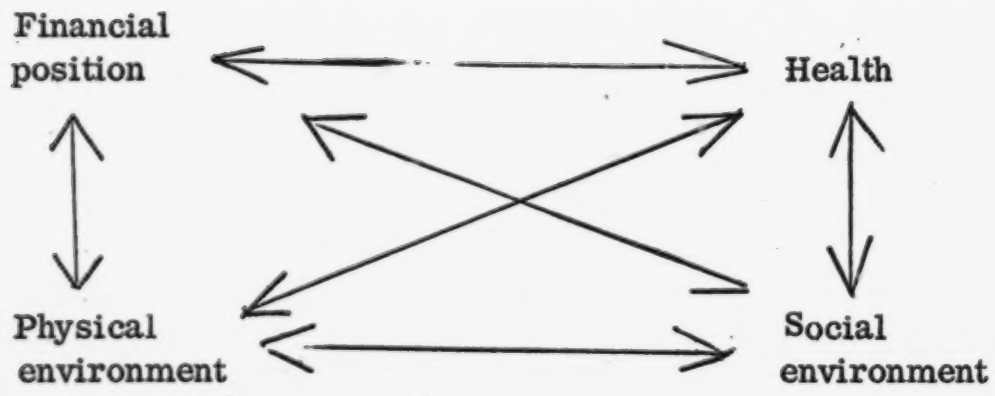

Figure C. Casual Interrelations Among Retirement Decision Areas.

EFFECTS UPON:	EFFECTS OF: FINANCIAL POSITION	PHYSICAL ENVIRONMENT	HEALTH	SOCIAL ENVIRONMENT
FINANCIAL POSITION		Different types of housing & neighborhood vary in cost, affect % of income spent for housing, vs. other expenditures. Neighborhoods and communities vary in quantity and quality of medical, cultural, & other "resources".	Can affect ability to work, age of partial or full retirement, % of income spent on medicine and medical treatment.	Hobbies and other activities can cost money, not cost money, or be income producing. Position in and relationships with family can affect financial and other kinds of support a person gets.
PHYSICAL ENVIRONMENT.	Determines what kind of housing and neighborhood person can "afford"		Poor health can limit the kind of housing, climate, etc., person can live in.	Decisions about use of time (job, leisure activities) affect choice of residence. So do relationships with family and friends.
HEALTH	Income and medical insurance coverage affect quality of care when person is ill or disabled. Economic status is also related to general level of health, quality of "preventive" medical treat-care throughout life.	Climate and physical conditions of environment affect personal health and safety, also a person's "morale" or mental health.		Person with good family and friendship relations are more likely to have good mental health, and to have help and companionship when he is ill. Interesting, rewarding activities also related to physical and mental health (boredom can have negative effect on health).
SOCIAL ENVIRONMENT.	Affects family SES, position of family members, and satisfaction of intra-family relations. Affects friendship choices and patterns, and how person uses his time(including whether he continues to work, or whether he can afford to travel, buy hobby equipment, etc.	Residence affects proximity to family and friends, chance of making new friends, proximity to potential jobs and leisure resources.	Poor health limits visits and activities with family and friends, and type of activities person can engage in.	

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